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CONTENTS

We Recommend More Team Research..... 29
HAROLD VAN WINKLE, *Bowling Green State University*

Teachers Explore Their Attitudes toward Research..... 31
ABRAHAM SHUMSKY, *Horace Mann-Lincoln Institute of School Experimentation, Teachers College, Columbia University*

The Relation of Format Organization to Learning..... 39
GEORGE R. KLARE, *Ohio University*; EMIR H. SHUFORD, *Lackland Air Force Base*; WILLIAM H. NICHOLS, *University of Illinois*

Editorial Comment..... 46

Readings..... 49
Colleges for Our Land and Time: the Land-Grant Idea in American Education; The Three R's Plus: What Today's Schools Are Trying to Do—and Why; Evaluating Student Progress in the Secondary School; The Student Teacher in Action; Education as an Industry; The Teacher's Personal Development: an Introduction of Self-Awareness and Interpersonal Relations

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We Recommend More Team Research

By HAROLD VAN WINKLE

Upon completion of a study that took 18 months and involved more than five thousand persons, the members of the research team urged me to write a report, not of our findings but of the exceptional experience we had had working as a team. There were seven of us—six graduate students at Bowling Green State University, completing requirements for Masters' degrees in education, and myself, director of the study. We started our work together by meeting for an hour and a half every day throughout the eleven weeks of summer school. At this time individual members reported on the background study they were doing, and co-operatively we planned the project and constructed instruments for collecting the data we should need.

During the school year that followed, all of us were in school work, either as teachers or administrators, but in our spare time we ran pilot studies and collected data. We met occasionally during this time; but in the following summer we went on a schedule of daily meetings again, tabulating and analyzing the data we had collected and writing a report of our findings and conclusions.

Never once throughout the entire time did enthusiasm flag. Each member of the team was a constant spur to the efforts of others. In the study of related literature, each team member covered a different aspect of the project and reported his findings in detail to the group. Planning the project and constructing the instruments were the results of the combined thinking of the group. Sharing experiences and comparing results of visits to the various school systems in gathering data provided enjoyable and thought-provoking sessions, as did the work of tabulating and analyzing the data.

The research project was a study of school-community information programs in northwest Ohio. For the study we selected

by means of stratified random sampling forty-two school systems in nineteen counties. This gave each of the seven members of the team six school systems to study in detail. By this method, all team members did precisely the same kind of investigation, although no two worked in the same school system. At one time we had considered doing a study in which each member of the team would do a different aspect of one general problem—an interesting problem to try at some time in the future—but we finally decided to investigate one problem in greater depth rather than doing something with more breadth on a more general problem.

This arrangement was satisfactory to the dean of the Graduate School and to the faculty of the Department of Education, a clearance needed since the six graduate students were working for the Master of Education degree. At Bowling Green State University this is a non-thesis degree, but each candidate for the degree is required to complete a rather extensive research project.

After we had planned the project, we asked for and received a grant from the Midwest Administration Center of the University of Chicago to cover a share of our expenses. While the money we received was most helpful, we valued even more the recognition that accompanied it. We were then able to say to school superintendents whom we approached that the project was being sponsored by the Kellogg Foundation. This gave the project considerable prestige and assisted in many instances, no doubt, in our receiving much better co-operation than we would have received without it.

The results of the study have been published elesewhere.[1] This short paper is a report on the by-product of team research. We heartily recommend this method of study as one of the most effective and interesting ways known of conducting graduate research. There is no question in our minds but that group interaction provides much greater stimulus and incentive than is ordinarily found in individual research.

[*Continued on page 55*]

[1] "What Do Parents Say about School Taxes," *Ohio Schools*, XXXIV (April, 1956), pp. 28–29; "Older Teachers Aren't Necessarily Grumpy," *Nation's Schools*, LVIII (September, 1956), pp. 56–57 [Reprinted in *ATA Magazine* (January, 1957)]; "Lay Participation: Key to Communication," "Attitudes toward Lay Participation," and "Lay Participation in School Affairs," *Phi Delta Kappan*, XXXVIII (October, November, and December, 1956), pp. 31–32, 70–72, and 110–11; "The Crux of Parent-School Relations: Communications," *School Executive*, LXXVI (December, 1956), pp. 47–48; "Good Schools Tell Their Story," *Administrator's Notebook* (December, 1956), pages not numbered.

Teachers Explore Their Attitudes toward Research

By ABRAHAM SHUMSKY

THE purpose of this article is to report an attempt of a group of teachers—graduate students taking a course in research—to explore and understand their attitudes toward research. At the beginning of the course the instructor had said that students come to this new research experience with different feelings and expectations. At first these feelings are related mainly to the type of work that is expected. But as the course proceeds, the participants will have reactions to the type of work accomplished, the leader, and the like. These feelings are going to play an important rôle in determining the success and satisfactions of the participants.

One of the course objectives is to study and explore these feelings. Nothing was said about changing feelings for fear that such a statement would arouse the negative reaction, "He does not like my attitudes so I must hide them."

An "attitude finder" was administered to 25 students in the first session. The students were asked to use code numbers rather than their names so that a more honest picture would be forthcoming. The attitude finder attempted to explore students' reactions with regard to the following categories: their feelings of confidence in doing or reading research (Items 1-5), the importance of research to teachers (Items 6-15), and their feelings toward the research course (Items 16-17). The following is a sample test, giving only the test items:

Views Concerning Research in Education

. . . . . .

Directions: Next to each of the following statements are 5 choices: Strongly agree, Agree, Undecided, Disagree, Strongly disagree. Check each statement [with the phrase] which best expresses your opinion about that statement.

1. I feel adequate in reading and interpreting published research.
2. I feel fairly confident about my ability to work in a research way on the job.
3. I have a feeling of inadequacy to do a task which seems to involve the scientific approach.

4. * I do not have the temperament for research.
5. Most college graduates who have undergone training for teaching are poorly equipped to undertake any kind of research projects.
6. I think participation in research can lead to more change in the participant's school practices than his reading the research of others.
7. Research should be carried on by school people in order to improve classroom situations.
8. Research may be valuable for psychologists, but not for teachers.
9. * Research is a highly specialized activity which should only be carried on by experts.
10. Research is of little help in meeting classroom problems.
11. Doing research is too time-consuming for busy teachers to engage in.
12. Research activity on the part of the teacher is a growth-inducing enterprise.
13. Teachers should learn from the results of research studies rather than do research themselves.
14. Children at school should do research under the guidance of their teachers.
15. I see research possibilities in my work.
16. * Taking a course in research is all right for some teachers, but a waste of time for most.
17. This course provides an opportunity for work on a problem which has been bothering me.

At the completion of the test, the students were asked to react to the three starred items by writing a brief comment telling why they reacted to each as they did. When the three tests were completed, the test papers were shifted around to protect anonymity of the subjects. The group then began to analyze the results of the attitude finder.

THE various items were divided into three categories. An examination of the first category, "feelings of confidence in doing research," showed that answering "strongly agree" to Items 1 and 2 meant strong feelings of adequacy, while answering "strongly agree" to Items 3, 4, and 5 meant strong feelings of inadequacy. Consequently a scoring system to show feelings toward research was devised: very positive, 5; positive, 4; undecided, 3; negative, 2; and very negative, 1.

The responses to the category, feelings of confidence in doing

or reading research (Items 1-5), scored by the system just given, were distributed as follows:

Score	Per Cent
5	20
4	45
3	18
2	13
1	4

If it is assumed that scores of 4 and 5 are indications of positive attitudes, while scores of 2 and 1 are indications of negative feelings, the results of the category show that 65 per cent of the responses are expressions of adequacy in one's ability to produce and consume research, while only 17 per cent are expressions of inadequacy.

The starred item in this category is the fourth, which reads, "I do not have the temperament for research." The limited class time did not permit a statistical analysis of the written responses to the starred items. The reading aloud of several responses (from the exchanged papers) served only as illustrations:

Positive reactions:

"I will enjoy doing research. However, it becomes frustrating when I cannot do the type of work commensurate with my ability simply because I do not have the time."

"If given a problem I consider important and the time to conduct the research, I think it will be a fruitful experience for me."

Negative reactions:

"Research involves tedious work of digging into books and requires much time. I dislike book work and have very little time or patience for it."

"My mind is occupied with other thoughts—how to live each day. I can honestly say that I am trying to do too many things outside school."

A brief class discussion summarized the results of the first category this way: The majority felt adequate in handling research, but at the same time worried about the time factor. A small minority felt inadequate. They emphasized the tedious library work, the danger of getting involved in serious work.

The responses to the category, the importance of research to teachers (Items 6-15), scored by the system devised by the group,

were distributed as follows:

Score	Per Cent
5	26
4	45
3	15
2	13
1	1

The table shows that 71 per cent of the responders thought that research is practical for teachers; only 14 per cent believed that research is impractical.

The starred item in this category, "Research is a highly specialized activity which should only be carried on by experts," elicited written reactions of which the following illustrations were read to the class:

Positive reactions:

"Everyone should inquire into problems which bother him. People should not leave their every move to the experts."

Negative reactions:

"Only experts should carry on research because they are best trained for it and the layman could only rewrite the work of others."

The brief discussion that followed emphasized that the majority definitely believed that teachers could and should be researchers.

The responses to the third category, their feelings toward the research course (Items 16-17), when scored by the system devised by the group fell in the following percentages:

Score	Per Cent
5	3
4	30
3	25
2	35
1	5

Only 33 per cent of the responders, if their scoring of the test expressed their true opinions, thought that the course was worth taking; 40 per cent believed that it was not. These results struck me as being of utmost importance in terms of the exploration of the attitudes of the group to the expected research experience.

THROUGHOUT the class discussion, I looked at the evolving results of the attitude finder with dismay and wonder. My hypotheses (which were never revealed to the group) were that students felt inadequate and apprehensive in having to deal with research, and that they did not consider research a practical activity for teachers. Both of these hypotheses were not supported

by the evidence. The majority of teachers expressed positive attitudes toward research. Recalling some of the off-guard expressions of previous students (such as, "I am scared stiff") made it even more difficult to understand the factors underlying these wrong predictions.

The results of the third category—the individual's attitude toward the course—only added confusion. The trend of positive attitudes revealed in the first two categories was reversed. For the first time a slight majority of the responses were expressions of negative attitudes. The perplexing question was why did the third category change the trend of positive attitudes? I decided to point out this inconsistency and confusion to the group and hear the members' interpretations.

The group itself was too engrossed in this new experience of computation of the results—because of too many trees they did not see the forest. They could not see the meanings that these figures conveyed or the questions they raised. The problem was to help them see the total picture and face its implications. The following gives the main arguments in the class discussion.

INSTRUCTOR. Let's stop to look at the results of the three categories, which are recorded on the blackboard, and see what we can learn about our attitudes toward research. The percentages of responses to the three parts of the attitude finder were:

	Positive	Negative
Category A (Items 1–5)	65	17
Category B (Items 6–15)	71	14
Category C (Items 16–17)	33	40

JOYCE. Categories A and B show positive attitudes toward research, while Category C does not. There is even a slight majority of expressions of negative attitudes.

JOHN. This is strange. Why did we react so differently to Category C?

(There was a long silence in which no one suggested any explanations.)

INSTRUCTOR. This question bothers me, too. Perhaps reading some of the written reactions to Category C will throw some light on this problem. You reacted to Item 16, which read, "Taking a course in research is all right for some teachers, but a waste of time for most." I suggest that we start with negative reactions.

(Several negative reactions were read.)

"I answered agree because I think most teachers feel that attempting to do anything new brings down the wrath of the system on their heads."

"I feel that the kind of teacher an individual will become is more or less predetermined."

"Most teachers would not think of spending valuable time on a course in research. . . . When you come right down to it, most teachers have the same basic classroom problems, and so far no one solution to any one problem was the one."

"It is largely a waste of time and only beneficial to the senior teachers."

"Enough research is done by experts, what is the use of adding to it?"

"I will not do research unless I have to."

HOWARD. These reactions say that it is dangerous to do research. One may run into trouble with the administration.

IRMA. Another emphasis is that research is really valueless, teachers are not ready to change, and research itself cannot come to any definite and concrete answers. Research is of little value especially for the beginning teacher.

RUTH. The last negative reaction read was a good expression of feelings. It said, "I don't want to do research" period! The writer even did not care to explain the reasons. I think this is the way people speak when they express real feelings.

INSTRUCTOR. Category C deals with attitudes toward the research course. What is it in the course itself that students reacted to?

LEE. The reaction was to the major requirement—the fact that each one has to produce an individual piece of research.

EDWIN. Yes, she is right. The reactions did not deal with lectures or the subject-matter to be taught.

JOYCE. When we speak about this course, we mean doing research. Remembering that it is a great investment of time and energy, obviously we tend to raise the questions whether research is valuable for us as teachers and whether as beginning teachers we feel secure in experimenting.

(It is interesting to note that Joyce's strong emphasis on the "we" and "us" encouraged other students to speak the same way.)

JOHN. But in Categories A and B these questions that you (Joyce) are raising were definitely answered. A strong majority said that they felt adequate in doing research, and an overwhelming majority claimed that research was practical for teachers. It would be interesting to read reactions from one or two papers and see these inconsistent attitudes as they are expressed by the same individual. Did they cheat?

(The members of the group laughed. I wanted to follow John's suggestion, but immediately changed my mind. The feeling was that it

might create resentment in those individuals whose papers were going to be read. One is ready to take and even benefit from criticism of "inconsistency" when he is an integral part of an "inconsistent group." Being singled out, however, is embarrassing and can be even devastating.)

JOYCE. I would not like to call it cheating. First, it was anonymous and there was no reason to cheat. And second, why did they not cheat on Category C?

INSTRUCTOR. So, what would you call it?

JOYCE. I don't know. I can speak only for myself. The truth is that I have ambivalent feelings. On one hand, I am convinced that research is an important factor in promoting the cause of education. On the other hand, I approach research with much skepticism and hesitation.

BURT. Yes, our culture glorifies research. You hear it every day on the radio. "It's based on research" means "it's good and valid, buy it!" Only teachers are in a peculiar position. We cannot buy research because the findings cannot be applied to our own field situation.

HOWARD. One feels lost in trying to understand a research study. No wonder the joke says that research states what everyone knows in a language no one understands.

(Laughter.)

IRMA. A more difficult problem is that research was designed for an ideal situation. Most of us here don't have the accommodations nor the materials that the experts use.

EDWIN. It is almost like the unrealistic educational films they show of a teacher working with a committee of six pupils, and you wonder what the other thirty are doing.

INSTRUCTOR. The discussion here evolves from the difficulties in translating research findings into the language of classroom practices. Category C, however, deals with producing, rather than consuming research. Your reactions to the task of doing research should be further clarified.

BURT. Right. This only intensifies the problem. The written responses to Category C point out that in addition to questioning the usefulness of consuming or producing research, the group perceived threats in experimentation and felt anxious and insecure.

JOHN. I would like to come back to my previous question. Why is it that Category C elicits reactions different from Categories A and B? Why is it that in reacting to Categories A and B the group expresses feelings of confidence and is excited about the importance

of research for teachers, while in Category C they say exactly the opposite? What is going on here?

INSTRUCTOR. Looking at the wording of Category C (Items 16–17) it is seen that the central word is *course*. The word does not appear anywhere in Categories A and B.

JOYCE. The word *course* is very important. It brings the problem close home. It's I, Joyce, who's taking this research course, who has to invest a great deal of work, who has faced the threats and challenges of experimentation, and who has to worry. Category C speaks about me personally.

JOHN. What about Categories A and B? Don't they speak about you personally?

RUTH. In these categories the other set of values, the cultural expectation that research is very important, prevails. Look at Item 7 (Category B)—"Research should be carried on by school people in order to improve classroom situations." I would like to know if one could find it easy to disagree with such a statement.

IRMA. But look at Item 2 (Category A)—"I feel fairly confident about my ability to work in a research way on the job." Here the *I* is emphasized. Would you say that this statement is not personal?

JOYCE. No, it is not personal. I don't perceive this statement of "I feel fairly confident" in a context of a research course. Agreeing with this statement does not constitute any immediate commitment to action. However, agreeing with Category C means that I have to act now in the context of the course.

EDWIN. Were we really so sophisticated in thinking about all these points in reacting to the attitude finder?

LEE. Perhaps these feelings were not verbalized, but they definitely influenced our reactions.

THE analysis of the attitude finder proved to be self-revealing. The group's attitude toward research is governed by two sets of values. On one hand, the group introjects the cultural norm of the authority of research and professes allegiance to the importance of experimentation as a way of growth for the teaching profession. On the other hand, when the group members have to face the personal implications of research as consumers or producers, they experience resistance and express it in negative attitudes. In other words, many times the question is raised of whether we are ready to apply a specific research finding to our

[*Continued on page 56*]

The Relation of Format Organization to Learning

By GEORGE R. KLARE, EMIR H. SHUFORD, AND WILLIAM H. NICHOLS

THE use of heads and sideheads in a text is appraised as an aid to learning in this study. This report is the fifth in a series devoted to examining the relationships between certain factors of communication and the learning of technical training material. The variables of communication examined in the four earlier reports (2, 3, 4, 5) are:

. . . career preferences and aptitudes
. . . human interest (Flesch human interest readability formulas)
. . . style difficulty (Dale-Chall and Flesch readability formulas)
. . . patterning the text (underlining)

The text used in this study was a lesson taken from an aircraft mechanics-training course. Different versions of the lesson were prepared by changes of organization within the text. In addition, the effect of the changes of organization upon the "acceptability" of the material to subjects was investigated. It seemed likely to the writers that even though increased organization might not provide significant increases in reading efficiency or retention, it might well make the text more acceptable to the readers. The subjects were 1,175 airmen in indoctrination training at Sampson Air Force Base.[1]

"Organization" in textual material may be considered in at least two characteristic ways, as the arrangement or sequence of the ideas presented (1) and as the format arrangement (paragraphing, headings, and the like). Logically the former is prior to the latter, and also the various idea organizations may seem the more likely to be productive of differences in learning and retention. In experimental work, however, organization through variation of ideas is difficult because of the problem of determining and achieving equality of content for the various versions used, without which the results are not easy to interpret. Format organization can be more readily used because the change in

[1] This research was supported in part by the United States Air Force under Contract No. AF33(038)–25726, monitored by the Personnel and Training Research Center. Permission is granted for reproduction, translation, publication, use, and disposal in whole and in part by or for the United States Government. The data on which the paper is based were collected while the authors were at the University of Illinois.

content is negligible. And the tacit assumption of writers and editors has long been that improved format, as well as idea organization, makes for easier reading.

This hypothesis has been tested a number of times in related ways, dating back to 1920 at least. Germane,[2] Holmes,[3] and Washburne[4] compared reading the text guided by questions with "undirected" reading (without questions) and found an increase in comprehension scores. McClusky compared the reading speed of college students who had and who had not previously "skimmed" the summaries and headings of reading material, and found an increase.[5] Robinson and Hall compared the reading speed and comprehension of college students on various materials with and without paragraph headings, and found non-significant differences.[6] Christensen and Stordahl compared the comprehension scores of airmen on a series of 36 versions of passages in which combinations of the following were used: an outline at the beginning, a summary at the beginning, a summary at the end, underlining main points, headings in statement form, and headings in question form. No significant differences in scores were found.[7]

THE study presented here related three levels of format organization to efficiency of reading and immediate retention. The 1,206-word lesson, taken from an aircraft mechanics-training course at Chanute Air Force Base and used in this study, consisted of a first half (eight paragraphs) on the "induction system" and a second half (nine paragraphs) on the "cooling system" of an aircraft engine. The standard lesson along with two experimental forms which differed from it in level of organization were used. The low-level organization maintained only the 17 paragraph divisions, thus appearing

[2] Germane, Charles E. "The Value of the Controlled Mental Summary as a Method of Studying," *School and Society*, XII (December 11, 1920), pp. 591–93.

[3] Holmes, Eleanor. "Reading Guided by Questions versus Careful Reading and Rereading without Questions," *School Review*, XXXIX (May, 1931), pp. 361–71.

[4] Washburne, John N. "The Use of Questions in Social Science Material," *Journal of Educational Psychology*, XX (May, 1929), pp. 321–59.

[5] McClusky, Howard Yale. "An Experiment on the Influence of Preliminary Skimming on Reading," *Journal of Educational Psychology*, XXV (October, 1934), pp. 521–29.

[6] Robinson, Francis P., and Hall, Prudence. "Studies of Higher-Level Reading Abilities," *Journal of Educational Psychology*, XXXII (April, 1941), pp. 241–52.

[7] Christensen, C. M., and Stordahl, K. E. "The Effect of Organizational Aids on Comprehension and Retention," *Journal of Educational Psychology*, XLVI (February, 1955), pp. 65–74.

similar to a page of the ordinary book. The Present (standard) level of organization contained two major sideheads (for the two halves of the lesson), one general run-in heading, and five run-in headings immediately preceding indented blocks of related paragraphs. The high-level organization maintained the features of the Present but provided run-in headings for all paragraphs. Because of the changes made, the text of low-level organization contained 1,206 words, that of the present-level 1,229, and that of the high-level 1,255.

Nine versions were used in the study. Three were called "unsplit," treating both halves of the lesson in the same way; these were termed *P*, for Present; *A*, for high-level organization; and *B*, for low-level organization. Six versions were called "split," treating the two halves of the lesson with a different level of organization; these were *AP* (first half *A* level, second half *P* level), *PA*, *AB*, *BA*, *BP*, and *PB*. All versions were cast in the same format except for the indicated differences. The identifying letters just given were printed in the upper right-hand corner of each first page.

Every fifth line of each version was numbered in order to obtain the number of words read by the subjects. During the experimental period the subjects recorded a code letter to indicate each complete reading and the time spent in its completion, as well as the number of the last line read when asked to stop reading.

A multiple-choice test comprising 50 items was used to measure immediate retention. The items were selected from a pool of 112 items in such a way that each paragraph of the reading material was allotted a percentage of items proportional to its size. The split-half reliability of the test was .87.

Acceptability (pleasantness to the reader) of the various split versions was determined on the basis of questions which appeared on the answer sheets for the test. The first question asked whether the subject noticed a difference in the way the two halves of the lesson were organized (he was asked *not* to answer in terms of content). The subjects who noticed a difference were asked which half of the material they thought "more pleasant to read," and were then asked to indicate why they made this choice. This was done by checking among the following possible choices all reasons felt to be important and double-checking the most important one: "Is more familiar to me," "Is more inter-

esting to me," "Makes it easier for me to understand," and "Makes it possible to read faster."

The 1,175 airmen were divided into groups: (106 subjects took version *AB* and *BA*, 107 each of the other versions). Various aptitude indexes were obtained for all airmen, based on the Airman Classification Test Battery.

The subjects were given 25 minutes to read the lesson, and during that period indicated the amount read in the way already described. The acceptability questions were then answered and, following this, 40 minutes were allowed for answering the test.

THE least time was required for a first reading of the *B* (low-level organization and shortest) version, and the most time for a first reading of the *A* (high-level organization and longest version). The differences were small and were not significant. Subjects who had the *B* version read the largest number of words, and those who had the *P* version, the smallest. Again the differences were small and were not significant.

Eighty-five per cent of the subjects answered "yes" to the first question regarding whether or not they noticed a difference in the way the first and second halves of the material were organized. Earlier reports of the study (3, 4, 5) had shown that such a judgment between halves of versions, presumably made on the basis of structural differences (in this case, organizational), may actually reflect content differences as well. A check was made on the effect of content in influencing judgments by comparing the percentage of subjects preferring the first to that preferring the second halves for all versions taken together (regardless of organization). It was found that the percentage preferring the second half (69 per cent) was significantly greater than that preferring the first half (31 per cent), the critical ratio being 7.69 ($p < .01$).

A further analysis was made to determine whether organization had any effect upon judgments irrespective of the greater effect of content. A 6×2 (split versions $\times$ preferred halves) contingency table yielded a Chi-square of 20.08 ($p < .01$), showing that organization did have an effect on judgments.

Because split versions were used, it was possible to equate for content in the analysis of the effects of organization upon preferences in the following manner. The relative preference for the high level (*A*) *versus* the low level (*B*) of organization was

determined by totaling the percentage of subjects preferring *A* in the *AB* version with that of subjects preferring *A* in the *BA* version, and then comparing this figure to the total preferring *B* (determined in the same way). The same kind of comparison was made for the *AP* and *PA* and for the *PB* and *BP* versions. The order of preference was *A* (high level), *P* (intermediate), and *B* (low level). The differences between *A* and *B* and between *P* and *B* were significant (the critical ratios were 2.46 and 1.99, respectively, $.05 < p < .01$); the difference between *A* and *P*, while favoring the former, was not significant (C.R. = 1.07, $p > .05$).

Analysis of the reasons given for the expressed preferences showed that "ease" was ranked a strong first, "interest" was second, "speed" an only slightly weaker third, and "familiarity" last.

TABLE I

ANALYSIS OF VARIANCE BASED UPON IMMEDIATE RETENTION TEST SCORES FOR THREE UNSPLIT ORGANIZATION VERSIONS (*A*, *P*, AND *B*)

Source of Variation	*df*	Mean Square	*F*
(1)	(2)	(3)	(4)
Versions	2	25.58	
Aptitude indexes	7	1,925.13	51.75*
Interaction	14	78.30	2.10†
Within	258	37.20	
Total	281		

† $.05 > p > .01$ ($F_{.01}$ for 14 and 200 *d.f.* = 2.17)
* $.01 > p > .001$

A previous study (2) had shown that subjects' mechanical aptitude indexes (stanine scores) correlated in the neighborhood of +.75 or higher with scores on the immediate retention test used in this and previous studies, and that this factor should be considered in the analysis of these data even though random samples of the subjects differed only slightly in average index scores. Samples of 94 subjects were therefore randomly selected for all unsplit versions in order to increase the precision of the experimental design and provide proportionality of aptitude indexes. Mean immediate retention scores were 28.23 for *A*, 27.59 for *P*, and 27.20 for *B*. A 3×8 (versions $\times$ mechanical aptitude indexes) analysis of variance was computed on these data and is presented in Table I. The figures show that the variance attributable to aptitude indexes and to interaction was significant,

while that attributable to versions was not. The significant interaction effect appeared due to individuals of high ability getting *higher* scores and those of low ability getting *lower* scores for the *A* version than subjects of similar abilities for the *P* and *B* versions.

The retention-score means for the split versions were in the same rank order with respect to the three levels of organization as those for the unsplit versions. Further analyses of the data for the split versions also generally confirmed those for the unsplit.

Previous studies on the effect of changes in format and related aspects of organization upon reading efficiency, comprehension, and retention have yielded largely negative results. While reading guided by questions (*versus* unguided reading) appears to increase comprehension (Germane, Holmes, and Washburne), it has been argued that results with this technique are of doubtful value because the questions have been largely the same as, or closely related to, those used in studying comprehension itself. The more recent study of Christensen and Stordahl showed no gain in comprehension with headings in question form. It seems probable, further, that mere presence of headings, in any form, *versus* their absence has no readily demonstrable effect upon reading speed, as Robinson and Hall found and as the present study indicates, at least unless the reader skims them before a more thorough reading (McClusky).

The study described here does show a definite increase in reader acceptability (pleasantness) for more highly organized as compared to less highly organized material. It would seem that degree of acceptability is potentially of greatest importance when reading is more or less voluntary, as it commonly is, but as it is not in an experimental situation, since the reader may read less of the material or none at all if it is too unacceptably presented. The question of whether or not the addition of headings increases immediate retention (comprehension) still remains. This study, in contrast to those of Robinson and Hall and of Christensen and Stordahl, provides a qualified affirmative answer (in the sense that the more able subjects showed a gain). It seems possible to the writers that the highly technical, and therefore complex, nature of the material used here may at least partially account for this; the subject-matter was clearly more technical than that used in the previous studies. This notion gains credence from a con-

sideration of the different types of material readers may encounter. Fiction, the least technical type, is least likely to have headings; the same is true for light nonfiction. As the material becomes more complex, and especially as it reaches the rather technical level of the college textbook, headings become more common. In other words, the results of this study seem to be in general agreement with the approach that writers have come to adopt over the years on empirical grounds.

THE study presented here was an attempt to relate three levels of "format organization" (chiefly larger *versus* smaller numbers of headings) to efficiency of reading, acceptablity, and immediate retention of technical training material. The effect of higher *versus* lower levels of organization upon reading efficiency (speed of reading) was not significant, but the differences in acceptability significantly favored the higher levels. The immediate retention test scores also favored the higher levels of organization, but the only significant difference appeared as an interaction effect with aptitude. [Vol. XXXVII, No. 2]

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EDITORIAL COMMENT

Civilizing Young Savages

THE recent outbreak of violence in certain secondary schools in New York City has focused attention again on the complex and difficult problem of juvenile delinquency. Since the city does not have enough well-trained regular teachers, guidance officers, special schools, probation officers, and correctional facilities to care for and rehabilitate the troublemakers, the Board of Education faced a difficult choice: it could keep the troublesome few in school and thus jeopardize the welfare of others, or it could suspend them from school and turn them into the street. It chose the latter alternative.

The trouble, of course, is not endemic to New York: it afflicts many communities. It is merely more virulent at the moment in that city; in fact, so serious that we can expect exceptionally vigorous effort to cope with it there—an effort that is long overdue. Since the situation has deteriorated so far and the task of providing adequate personnel and facilities is so great, it will take time to bring the more serious symptoms under control, and much longer to deal adequately with the causes of the trouble.

The New York situation presents not merely a school problem but one that is broadly social. Most of the offenders come from depressed and slum neighborhoods and from homes characterized by poverty, overcrowding, adult delinquency, and divorce. There is good reason to believe that, if proper means are available and sufficient effort is made, three-fourths or more of the offenders can be reformed into good citizens, but the effort, time, and money required will be tremendous. It will require leadership of a high order to correct the present situation and prevent similar occurrences in the future.

IN MOST discussions of the delinquency problem in general and the New York situation in particular that this writer has seen, one important consideration has been overlooked. It has to do with the long-range history of *genus homo* and the kind of culture to which its members are adapted. Human beings have spent more than 95 per cent of their time on the earth as food gatherers and hunters rather than as food raisers. It was only about eight

thousand years ago that man began to raise crops and thus moved into the agricultural age. Our biological evolution was practically complete by that time: very little change has taken place in the brief ensuing period. In other words, we are biologically and psychologically adapted to the life of the cave man. A genuine appreciation of this tremendous fact throws a flood of light on many of our problems in health, education, government, recreation, criminology, and other areas. This is indeed one of the most important generalizations that can be made with respect to human history.

For most people in the world the agricultural age lasted until our own time. For the people of Western Europe and the lands settled by them, a second great change in human living began about two hundred years ago—a mere moment in the history of the species. This was the coming of the machine age, which got under way in England in the latter part of the eighteenth century, spread rapidly to other Western countries, and is now affecting other parts of the world. The most extensive development has occurred in the United States and Europe.

It is impossible to exaggerate the importance of the change in human living brought about by the machine age. Without effecting any fundamental change in the human animal, it has forced him to live in a world of cities, assembly lines, traffic laws, sedentary jobs, hard pavements, and time clocks. The basic work of educational organizations, including families, churches, schools, youth organizations, and summer camps is that of helping young people develop the understandings, attitudes, habits, and skills that will enable them to live happily and successfully in their highly industrialized and urbanized world. In short, the teachers and others are trying to civilize young savages. Since their job is so complex and difficult, it is no wonder they do not always succeed.

It would take a good-sized book to explore all the aspects of the incompatibility between the inherited characteristics of our children and the conditions of the machine world in which they have to live. Only one aspect can be mentioned here. In the food-gathering era in which the human animal developed and in the agrarian era that followed, children from a comparatively early age had a substantial amount of work to do. As late as the middle of the nineteenth century the average farm boy or girl in America was expected from the age of ten or twelve to do enough work

to "earn his keep," that is, contribute as much to the family income as he consumed. Soon, he was contributing more than he consumed, thus helping support the younger members of the family.

For urban young people today, and especially for boys, there is little opportunity to work. Chores have all but disappeared and jobs are hard to get. Thus a major educational instrumentality has largely disappeared for the 85 per cent or more of our people who live under urban or semiurban conditions. And we have not found any satisfactory substitute for it.

WHAT does this mean for dealing with juvenile delinquency in New York and elsewhere? It means that this delinquency is to be explained, not only on the basis of poverty, broken homes, and depressed neighborhoods, but in considerable part on the basis of lack of opportunity for work experience. It means that we must take more seriously the job of identifying potential delinquents and providing proper educational programs for them. It means a revision of conventional ideas and practices with respect to child labor and compulsory school attendance. In New York, all children are required to attend school to age seventeen or until graduation from high school. They must attend full time to age sixteen, when they may with parental consent be released on employment certificates; but if so released, they must attend continuation school until seventeen. There is little doubt that many of the troublemakers in New York would have been better off if, at the age of twelve or fourteen, they had been removed from school and placed in work-and-education camps. They would have accomplished at least as much "book learning" and almost certainly would be better educated, that is, better prepared for good citizenship and satisfying personal living. Moreover, they would not have been a hindrance to the education of other pupils.

The facts of human history set forth briefly in the preceding paragraphs have implications that go far beyond the matter of juvenile delinquency. Not only the 945 pupils who have been dismissed from the New York schools, not only the estimated ninety-five hundred "hard-core delinquents" in these schools, but also the normal pupils need work experience. Developing ways of providing it as an integral part of growing up in the machine

[*Continued on page 56*]

READINGS

EDDY, EDWARD DANFORTH, JR. *Colleges for Our Land and Time: the Land-Grant Idea in American Education.* New York: Harper and Brothers, 1957. xvi + 328 pp.

In 1955 the land-grant colleges and universities in the United States enrolled more than one-fifth of all students in degree-granting institutions and awarded two-fifths of all Doctors' degrees granted in the United States. The history of the sixty-nine institutions that were created through Federal aid in an effort to serve more directly the needs of farmers, mechanics, and other workers is indeed interesting. Mr. Eddy has clearly revealed the extent and variety of contributions of these colleges and universities since the Land-Grant Act was passed by Congress and signed by President Lincoln in 1862.

The dissatisfaction of many people with the cloistered activities of the early nineteenth-century colleges is outlined in the citation of the report of Francis Wayland to the Brown University Corporation, regarding the declining enrollments in Brown University. Wayland said:

> Our colleges are not filled, because we do not furnish the education desired by the people. . . . We have produced an article for which the demand is diminishing. We sell it at less than cost, and the deficiency is made up by charity. We give it away, and still the demand diminishes (page 8).

Efforts to provide agricultural schools and colleges and schools for workers were made by various people as early as 1754. During the early part of the nineteenth century, several agricultural colleges were started, but none lasted long. For many years, efforts were made to provide for colleges through Federal grants. Jonathan Turner in Illinois and Congressman Justin Smith Morrill from Vermont were especially active in promoting these programs. Morrill succeeded in getting the Land-Grant Bill passed in 1862, after suffering a veto of a similar bill in 1859. The law provided for funds for expenditure by the legislature of each state for such purposes as

> . . . the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life (page 33).

Those in charge of the early land-grant colleges had tremendous difficulties. The sheer problems of developing a new kind of educational

institution with the focus upon practical learning were overwhelming. Even the farmers were dissatisfied with the program. Churches objected to the non-sectarian institutions; the Army was not interested in the military-training provision; staff members for the new institutions were scarce and inexperienced; facilities were meager; and efforts to provide for manual-work experience at the college for each student were seldom successful.

Over the years the land-grant college programs spread from limited teaching of agriculture, mechanic arts, and home economics to veterinary medicine, liberal arts, graduate study, and activities in extension and other adult-education programs. Additional support from the Federal Government brought about experiment stations and expanded activities in research. Concern for the building of effective liberal-arts and general-education programs became increasingly evident as the institutions developed into large colleges or universities.

In the very interesting chapter on the Negro land-grant colleges, the relatively small emphasis given to Negro higher education through land-grant funds before 1890 is noted. In 1890 new legislation specifically provided for Negro higher education through land-grant funds, thus making possible the initiation or improvement of programs for the seventeen Negro land-grant colleges. The author points out that the development in these instances has been slower than that of the other land-grant colleges, although the changes of these Negro colleges have been accelerated in recent years. Implications of integration laws for the Negro land-grant institutions are pointed out. In fact, in West Virginia, where integration of state-supported higher education is in effect, the land-grant function of West Virginia State College (a former Negro land-grant college) has been transferred to the University of West Virginia, since the date of publication of this book.

In his final chapter, the author clearly presents a philosophy of the land-grant institutions. He notes that "the traditional aim of land-grant education has been a two-fold concern for the development of society and for the development of the individual to serve society" (page 280).

This reviewer found the book interesting and informative. It overlaps Earle D. Ross's earlier book, *Democracy's College*, but supplements it in many ways, not only in terms of the calendar but in terms of phases of the land-grant movement. A large amount of data regarding some individual colleges is included.

EARL W. ANDERSON

BECK, ROBERT H., editor. *The Three R's Plus: What Today's Schools Are Trying to Do—and Why.* Minneapolis, Minnesota: University of Minnesota Press, 1956. x+392 pp.

This book has been written to make available to parents and other citizens interested in the pros and cons of modern education a descrip-

> tion of just what today's schools and today's teachers are trying to do —and why. We . . . have learned . . . that such a description is needed if discussion of the schools is not to degenerate into emotional, ill informed argument (page v).

The reviewer was pleased to find a carefully prepared explanation (defense) of modern elementary- and secondary-school practice written by university professors. Twenty-six of the thirty-one authors are members of the University of Minnesota faculty; four contributors are engaged in public-school work in Minneapolis or St. Paul; one author is on the faculty of the University of California at Berkeley.

The large number of independent essays, each focusing on a particular problem or area in education, results in a somewhat annoying amount of repetition concerning underlying purposes of education. The book does, however, hold together remarkably well in its three major divisions.

Section I (Changed and Changing Conceptions) provides a good overview of changes which have occurred in the past twenty-five years (since present parents were enrolled in elementary and secondary schools). The chapter on "Individual Differences and the Curriculum" by Walter W. Cook is particularly thought-provoking.

Section II (Subjects and Services) contains twenty chapters which consider, in general terms, almost all of the different types of educational experiences provided in modern elementary and secondary schools. The parent who is concerned about decreasing drill in certain mathematical operations can find reasons for this change in the chapter on mathematics (pages 169–80). The value (or lack of value) of parsing sentences and similar formal grammar work is considered (pages 125–26). Although this entire section is written primarily for parents, teachers of various academic areas will profit from reading these descriptions of good modern practice since, as they are often willing to admit, their own practice may not be as good or modern as it ought to be.

Section III (Issues of Interest) contains only four short chapters but they provide excellent material for study and discussion by lay groups who ultimately, of course, have much to say concerning how the issues will be resolved. The chapters "Religion in the Public Schools" and "Education and Leisure" are particularly forceful and provocative.

It is the reviewer's judgment that few lay parents will find the book easy to read. This is unfortunate because the ideas and research findings in the book are those that modern educators need "to get across" to parents. Possibly the book will be most valuable to teachers and administrators who can, as occasions arise, personally help get the ideas into the minds of parents.

The book ought to be required reading for newly elected members of boards of education who need to get a quick overview of "what today's schools are trying to do—and why."

HERBERT L. COON

SCHWARTZ, ALFRED; TIEDEMAN, STUART C.; AND WALLACE, DONALD G. *Evaluating Student Progress in the Secondary School.* New York: Longmans, Green and Company, Inc., 1957. xiv+434 pp.

This book, the authors report, was written to help classroom teachers who continuously face the task of appraising outcomes of the teaching-learning process in which they are involved with students. In the judgment of this reader, the book used in this way can be a very helpful resource.

Especially noteworthy is the importance the authors attach to purpose in the evaluative process. For example, in discussing the matter of so-called intangibles, they state:

> The key to the measurement of intangibles is to be found in a clear definition of purposes. As we learn to analyze and define what it is we are trying to do, and as we learn how to translate these goals in terms of expected student behaviors, we can also learn how to measure those behaviors (page 21).

Also significant is their assertion that highly effective learning requires an involvement of students in the selection and organization of curricular content and in the analysis of behavior to be achieved. From this perspective, they deal with such topics as objective tests, essay and short-answer tests, check lists and questionnaires, observation techniques, informal techniques, the case study, and standardized tests. Four chapters focus on the interpretation of test scores, the diagnosis of results of measurement, and the guidance and reporting of student progress. All of these topics are discussed in a way that should clarify them for the teacher who does not have a statistical background.

In view of increasing evidence to support the proposition that a teacher must develop an adequate self-concept if he is to function most effectively, one wishes that the authors had explained what this means in the total evaluative process. Until a teacher senses clearly what kinds of operations are involved here, there is a strong probability that this crucial dimension of the process will continue to be short circuited.

PAUL KLOHR

WIGGINS, SAM P. *The Student Teacher in Action.* Boston: Allyn and Bacon, Inc., 1957. xii+217 pp.

Numerous textbooks for student teachers have appeared in recent years, and the publication of a new book would normally receive only passing mention. The fact that this one is distinctly different from all the others makes it a significant addition to the literature in this field.

Unfortunately, most textbooks for student teachers are given largely to a review of methodology in the hope that the neophyte will be assisted in translating his learning about methods into actual use. By contrast, Wiggins tells the student teacher in his introduction:

> The aim of the book is to help you to see quickly your total responsibilities and to aid you in discovering courses of action in meeting those

responsibilities adequately. . . . The book goes beyond the scope of the usual handbook in student teaching but avoids the weighty comprehensive treatments common to conventional student teaching texts (page viii).

Beginning with two excellent descriptions of the normal progression of a student in a good program, the first three chapters treat the various relationships which are so important in student teaching. The concrete suggestions on human relations (pages 36–40) are probably more *à propos*, better written, and more likely to be well received than may be found in the literature anywhere. If all students and co-operating teachers could read and put into practice the ideas in these three chapters, the quality of student teaching in America could be transformed at once.

The second and third sections of the book deal with methods and activities beyond the classroom, but again in a different way. The emphasis is on stimulating the student to think, to do, and to understand relationships; but the related content material, already covered elsewhere, is wisely left out. As a result references to other sources are very important, and these are especially carefully selected.

The chief criticism which has been voiced of this work is that it is inadequate to serve as the single textbook. In view of the author's announced purpose this is a high compliment. The book is unquestionably the best supplementary textbook ever written for student teachers.

The author has proved himself unusually skillful in adapting the book to the diversely different plans of organization of student teaching found in different colleges. Further, he is generally able to avoid "preaching" to students, which is the normal flavor of writing which directs the behavior of others. The style makes reading a pleasure, for it flows almost as easily as fiction, with short introductions, brief analyses of problems, pertinent concrete illustrations, clearly stated principles, practical and positive suggestions, and brief summaries with a forward look.

While emphasizing principles of good human relations at all points, the author goes much further and frankly faces a large number of the potentially bad situations and problems without unduly frightening the reader. The student is given realistic but helpful ways to study himself and his behavior as well as practical suggestions for improvement. The most unusual feature of the book is a number of sensible suggestions to help the student teacher solve problems which arise because of the limited ability, experience, or insight of the co-operating teacher.

L. O. ANDREWS

VAN DEN HAAG, ERNEST. *Education as an Industry*. New York: Kelley and Millman, Inc., 1956. vii+163 pp.

Mr. van den Haag presents the thesis that education is a sound economic investment, but the opportunities to share in it are limited to those young people whose families are able to finance them while obtaining a

college education. He cites statistics to show that increased income results from additional education by comparing the earning power of physicians to that of street sweepers.

The author is strong in his recommendation of the concept that education as a capital good and as a consumer good should be preserved, also that it should not be supported by public taxation. That "freedom to purchase education as a consumer or capital good is a safeguard against exclusion of nonconformists" (page 64).

Many types of aid available to students from low-income families are analyzed and found to be inadequate to meet the needs of present-day society. He then proceeds to recommend a strictly economic system of financing collegiate education whereby students may borrow the entire cost of their education and repay it from their future earnings. However, the manner in which the original sum to be loaned on these long-term promissory notes would be raised is not presented by the author. A possible means of raising the initial capital sum may be found in the following observation:

> Most college and university as well as professional training leads to tangible and divisible returns which increase the income of the trainee. Where this may be expected, the alumnus practicing the skill which he acquired as a result of his education should repay the university (page 70).

Perhaps this is the method by which the author would expect to raise and maintain funds for operating the proposed loan fund for equalizing educational opportunity.

The program of aid recommended would in no wise increase the cost of college education to the taxpayer. It would simply afford young people who would not otherwise be able to enter a profession an opportunity to obtain the necessary preparation by repaying the cost from their increased earning capacity thereby increasing the economic level of the nation. Furthermore, it would not interfere with the programs of students who did not wish to avail themselves of the plan. The chief merit of the proposal seems to be that it provides a sound economic basis for equalizing educational opportunity without a subsidy from public funds.

ROBERT W. HAWS

BRUCE, WILLIAM F., AND HOLDEN, A. JOHN, JR. *The Teacher's Personal Development: an Introduction of Self-Awareness and Interpersonal Relations.* New York: Henry Holt and Company, 1957. vi+346 pp.

This is an excellent book. The authors state that "while the book is addressed to all those within the scope of the school who are concerned with ways of working with people, it is designed particularly for college students preparing to enter the profession" (page iii). This book should help not only professional persons in education and stimulate critical reflection on their part, but it should be of interest to parents and other persons who are

concerned about modern educational theories and problems.

These collaborators have set as their central theme the idea that the teacher's personal development "centers upon the significance of the teacher's experience with people, especially as that experience promotes self-understanding that leads to further understanding of others as people and problems are met within the area of school contacts" (page iii). The reader is first introduced to basic assumptions about scientific method and democratic social processes which the authors feel underlie the aims and procedures of the educational program. Following this, attention is given to the teacher's resources from childhood (Part II) and from youth (Part III). The chapters here included are well-written, well-documented accounts of child and adolescent development. The research from the fields of psychology, medicine, psychiatry, education, sociology, and social psychology are brought to bear in a nontechnical, but accurate and effective fashion. These two parts of the book should be of particular interest and help to parents. The last two parts of the book are written more directly for the beginning teacher or the teacher returning to the profession after an absence of some years. In Part IV chapters are included which deal with such topics as entering the teaching profession, working with learners, cooperating with professional associates, and living in the community. The content of these chapters is realistic and practical, dealing with ideas and questions which are of immediate concern to teachers before they begin service. In Part V, "The Experienced Teacher's Own Theory," the authors emphasize the idea that the

> . . . process of personal growth is never-ending, for pupil and teacher, and the major responsibility for promoting it successfully lies with the teacher. In this demanding task the teacher must depend upon his sense of the experience at hand in its relation to clearly perceived and constantly developing theory (page 310).

There are many other excellent features of this book which recommend it: an annotated list of instructional films at the end of each chapter, comprehensive chapter bibliographies, and study questions which are incorporated within the text.

HUGH D. LAUGHLIN

* * *

We Recommend More Team Research

[*Continued from page 30*]

Team research also makes possible the undertaking of studies of greater size than can be undertaken singly; in our study of related literature we agreed that more comprehensive studies of considerable scope are needed, especially in school-community re-

lations. Communication and co-operation between school and community are such broad subjects and have so many ramifications that one-man studies are often too limited for conclusions and generalizations that have wide application. But aside from producing findings that are of greater significance, we recommend the team method as a means of making graduate research a very enjoyable and worth-while educational experience.

[Vol. XXXVII, No. 2]

Teachers Explore Their Attitudes toward Research

[*Continued from page 38*]

work or to test a new idea in the classroom, we tend to hear a deep echo inside us which says, "Don't try!" The educational consultant will find it most difficult to help teachers do action research, that is, improve their school practices in a scientific way, unless he is able to find ways of helping teachers face their attitudes toward action research.

[Vol. XXXVII, No. 2]

Civilizing Young Savages

[*Continued from page 48*]

age is one of our most urgent and difficult problems. Happily, beginnings have been made which help point the way. The Civilian Conservation Corps and the National Youth Administration camps, which were improvised during the great depression of the 1930's, with all their defects, made a real contribution to education and human conservation. Other agencies, including the American Friends' Service Committee, the Boys' Towns, some summer youth camps, and some of the better correctional institutions, are rendering fine service. California, Minnesota, and Wisconsin have pioneered with work-and-education camps. Doubtless there will be no single, simple solution to the problem of providing work experience for young people, but, until we solve it, we shall not be successful at our job of civilizing young savages.

R. H. E.